

We claim:

1. An excitation vector generator, comprising:

an input vector providing system capable of providing an input vector having at least one pulse, each pulse having a predetermined position and a respective polarity;

a fixed waveform storage system capable of storing at least one fixed waveform;

and

a convolution system capable of convoluting said at least one fixed waveform with said input vector to output an excitation vector.

2. The excitation vector generator of claim 1, wherein said convolution system spreads an energy distribution of said input vector based upon said at least one fixed waveform over a subframe.

3. The excitation vector generator according to claim 2, wherein said convolution system performs a linear convolution.

4. The excitation vector generator of claim 2, wherein said input vector is provided from an algebraic codebook.

5. The excitation vector generator of claim 1, wherein said input vector comprises a vector having a plurality of non-zero samples.

6. The excitation vector generator of claim 2, wherein said fixed waveform storage system stores a plurality of fixed waveforms.

7. The excitation vector generator of claim 6, wherein said convolution system uses one of said plurality of fixed waveforms for each subframe.

8. The excitation vector generator of claim 1, wherein said convolution system modifies an energy distribution of said input vector.

9. A method of providing an excitation vector used in the production of synthesized speech, comprising:

providing an input vector having an energy distribution, said input vector having at least one pulse, each pulse having a position and a polarity;

storing at least one fixed waveform;

convoluting said at least one fixed waveform with said input vector; and

outputting the convoluted input vector as an excitation vector.

10. The method of claim 9, wherein said input vector comprises a vector having a plurality of non-zero samples.

11. The method of claim 9, wherein said input vector is provided from an algebraic codebook.

12. The method of claim 9, wherein convoluting comprises modifying an energy distribution of the input vector.

13. A system for providing an excitation vector used in the production of synthesized speech, comprising:

an input vector comprising at least one pulse, each pulse having a position and a polarity;

at least one fixed waveform;

a convolution system that is capable of convoluting said at least one fixed waveform with said input vector; and

an output system that is capable of outputting the convoluted input vector as an excitation vector.

14. The system of claim 13, wherein said input vector comprises a vector having a plurality of non-zero samples.

15. The system of claim 13, wherein said convolution system spreads an energy distribution of said input vector.

16. The system of claim 13, wherein said convolution system modifies an energy distribution of said input vector.

17. A system for producing synthesized speech, comprising:

at least one input vector, each input vector having a plurality of pulses, each pulse of said plurality of pulses having a position and a polarity;

at least first and second sets of at least one fixed waveform;

a switch movable to a plurality of positions, each position being responsive to one condition of a plurality of conditions; and

a convolution system;

wherein, when said switch is in a first position, an excitation vector results from a convolution, by said convolution system, of said first set of at least one fixed waveform with said at least one input vector; and

wherein, when said switch is in a second position, said excitation vector is based upon said second set of at least one fixed waveform.

18. The system of claim 17, wherein said convolution system modifies an energy distribution of said at least one input vector.

19. A method of providing an excitation vector used in the production of synthesized speech, comprising:

providing at least one input vector, each input vector having a plurality of pulses, each pulse of said plurality of pulses having a position and a polarity;

providing first and second sets of at least one fixed waveform;

determining which condition, of a plurality of conditions, exists;

outputting, if a first condition exists, a signal resulting from convoluting said first set of at least one fixed waveform with said at least one input vector; and

outputting, if a second condition exists, a signal based on said second set of at least one fixed waveform.

20. The method of claim 19, wherein convoluting comprises modifying an energy distribution of the at least one input vector.